

FIG. 1A

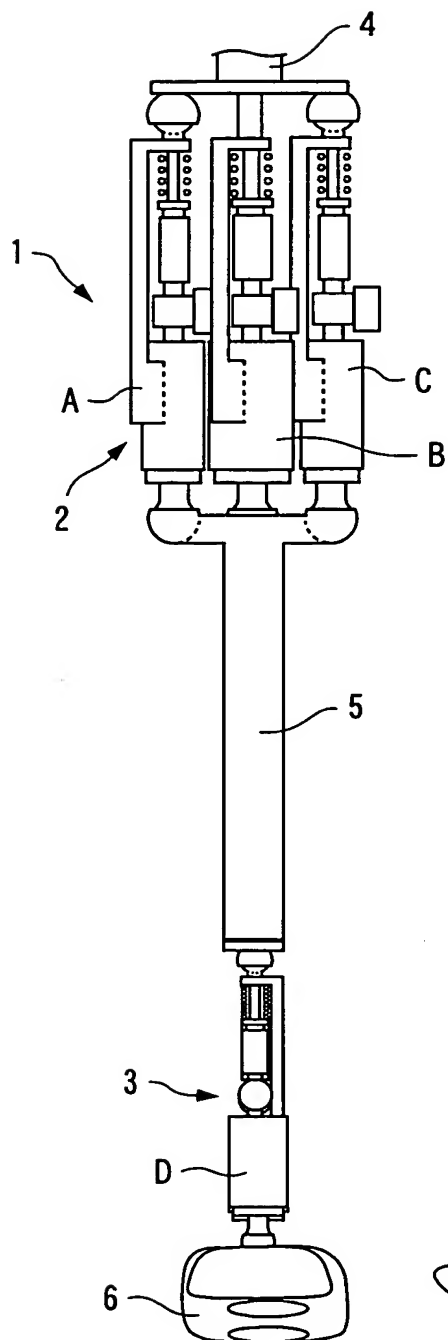
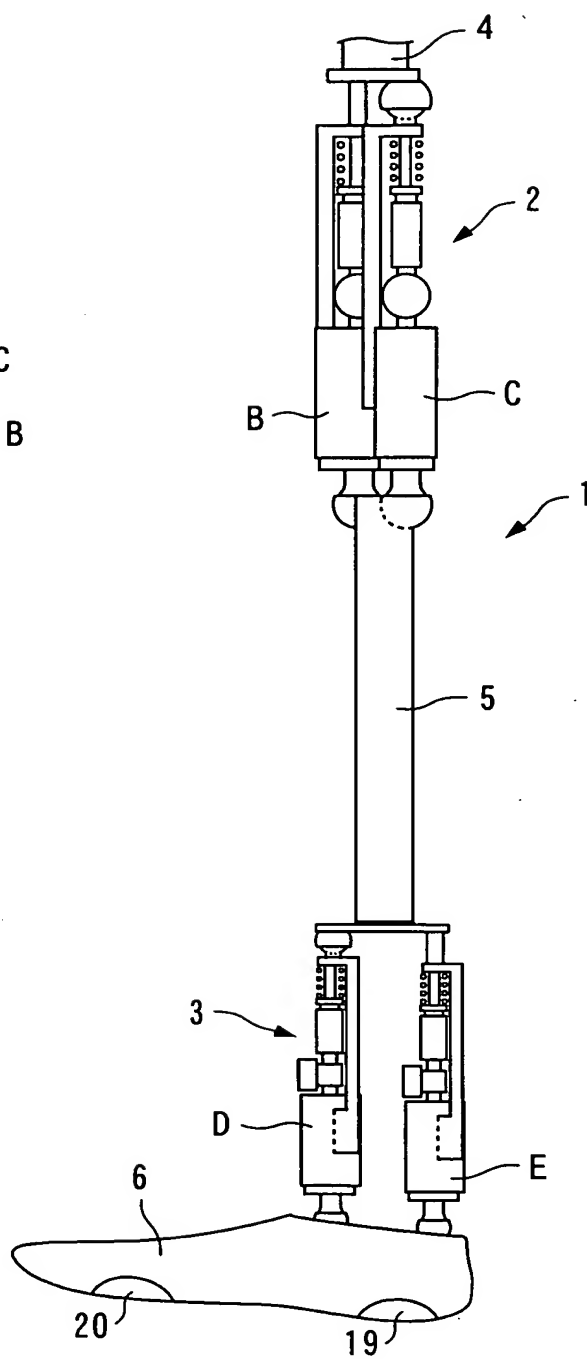


FIG. 1B



F I G . 2 A

F I G . 2 B

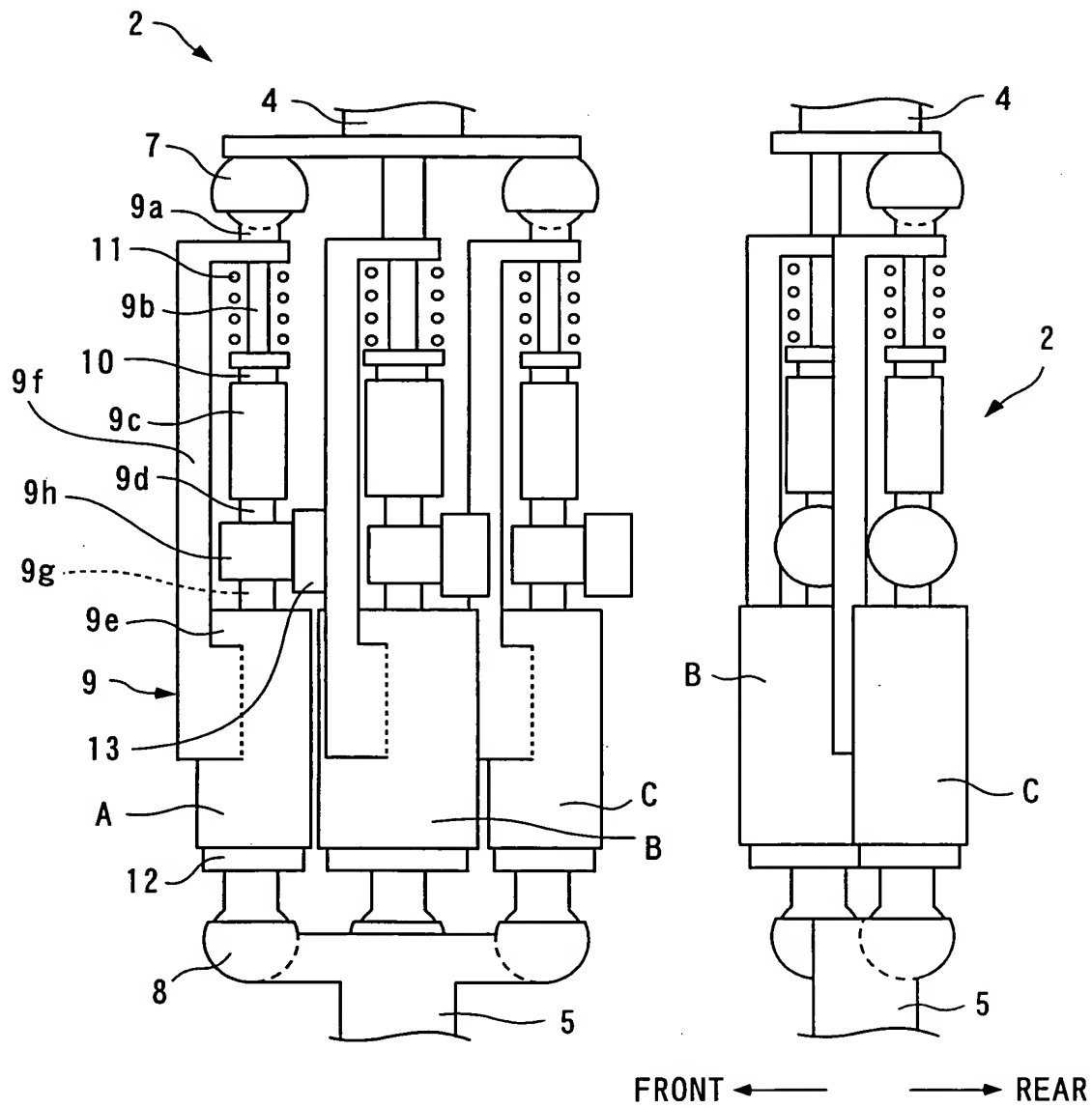


FIG. 3

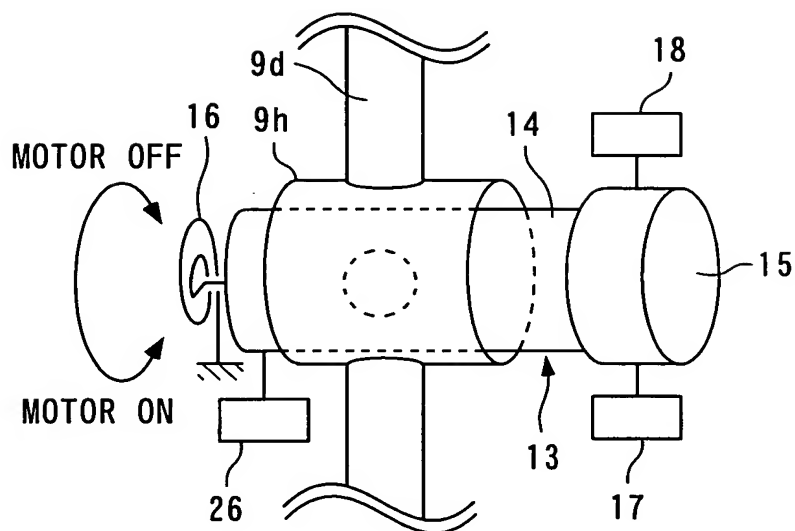


FIG. 4 A

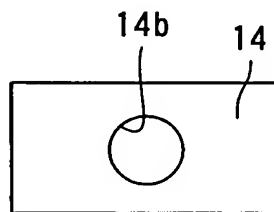


FIG. 4 B

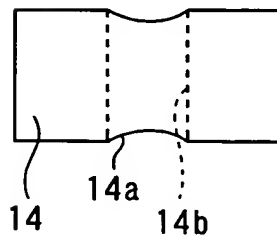


FIG. 4 C

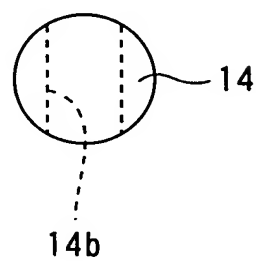


FIG. 5A  
FULLY CLOSED

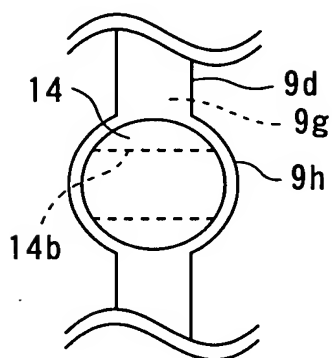


FIG. 5B  
FULLY OPEN

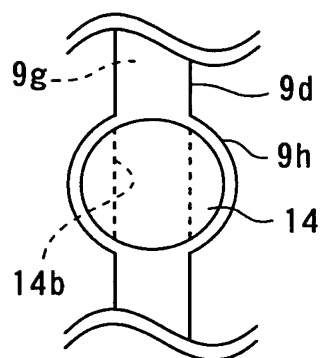


FIG. 5C  
PARTIALLY OPEN

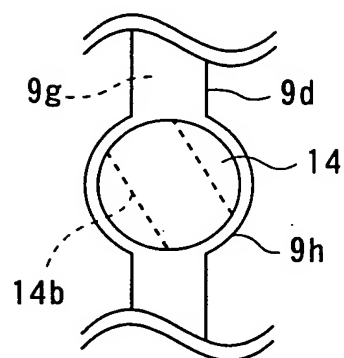


FIG. 6 A  
AT NORMAL TIME

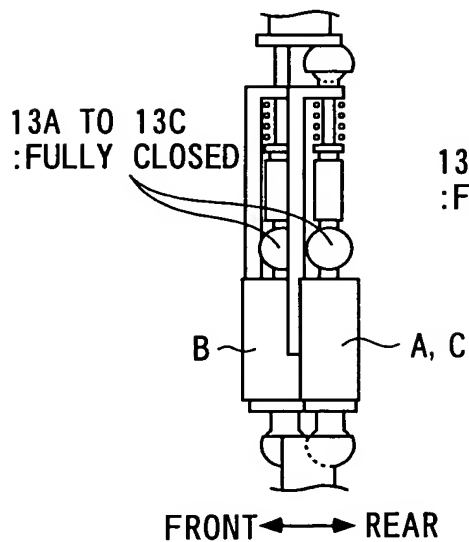


FIG. 6 B  
DURING WEIGHT  
APPLICATION

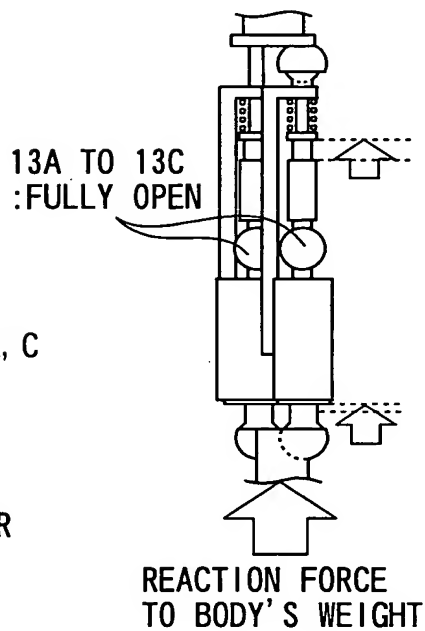


FIG. 6 C  
DURING PRESSURE  
MAINTAINING TIME

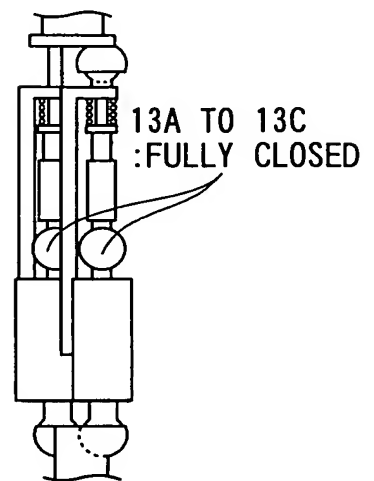


FIG. 6 D  
DURING BACKWARD ROTATION  
OF UNDER-KNEE MEMBER  
(KNEE BENDING MOTION)

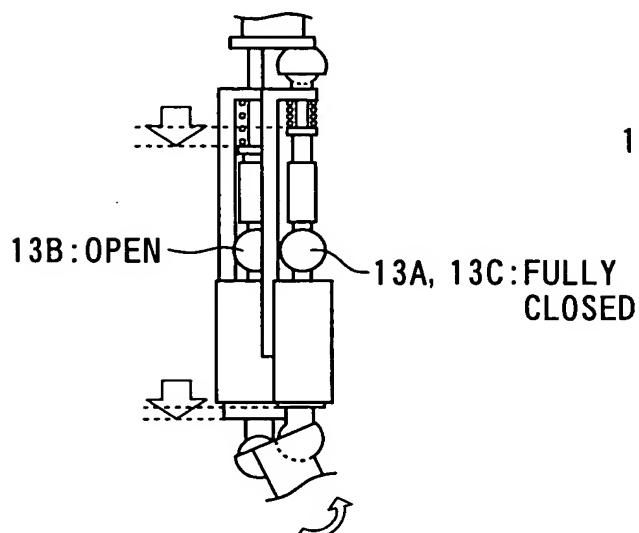
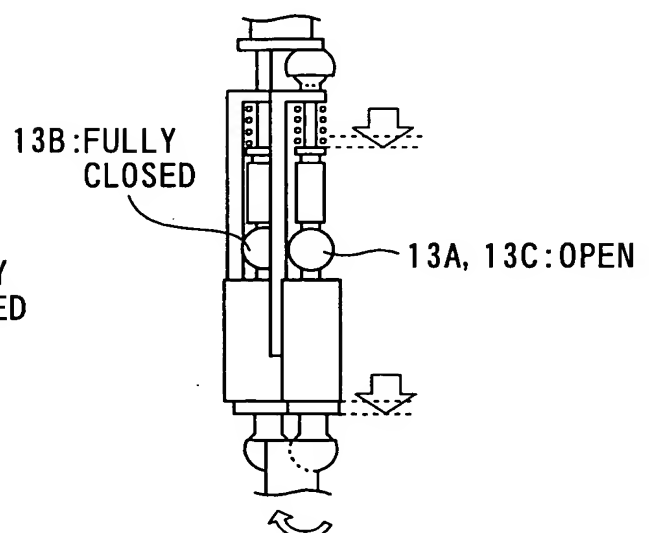
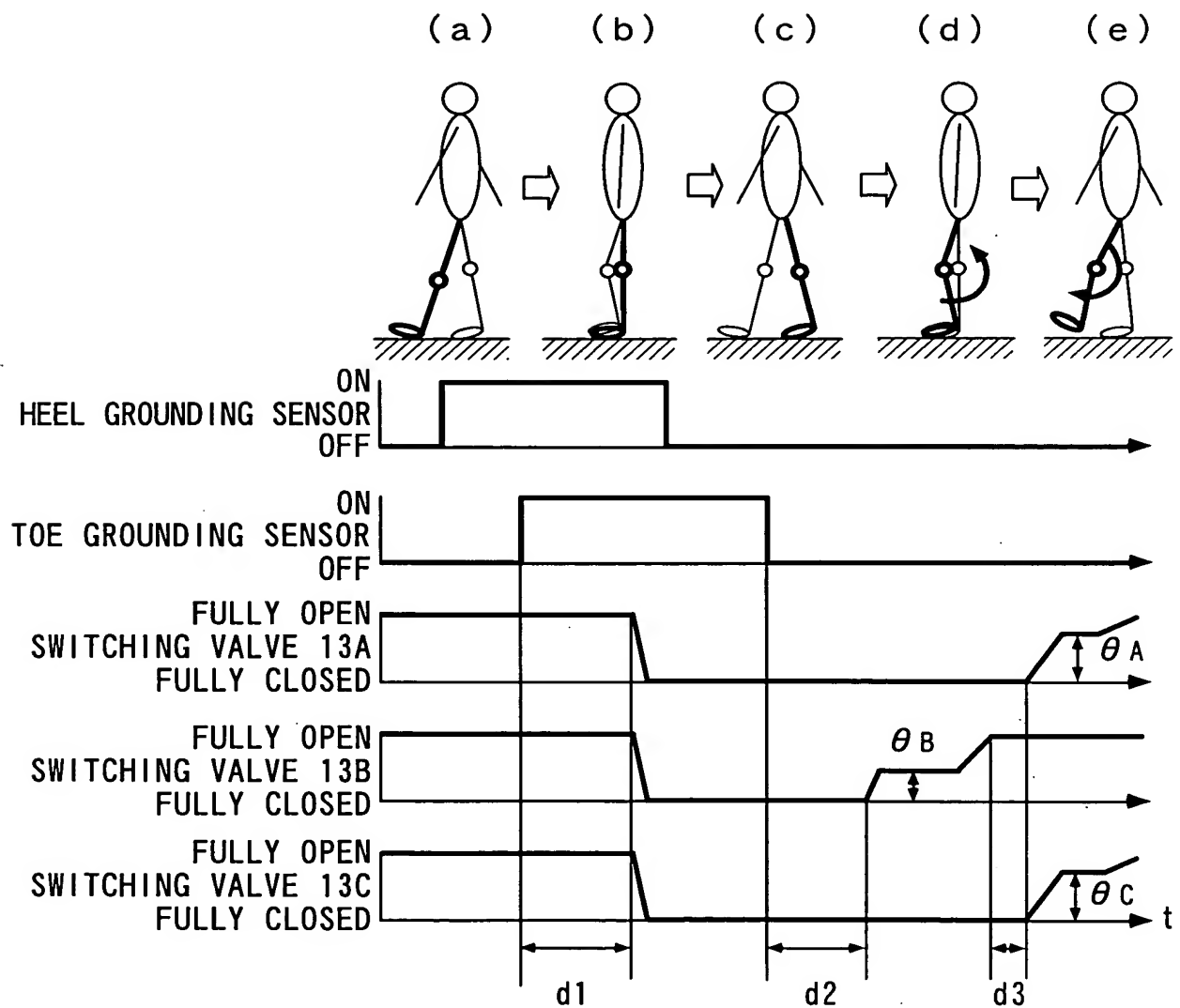


FIG. 6 E  
DURING FORWARD ROTATION  
OF UNDER-KNEE MEMBER  
(KNEE STRETCHING MOTION)



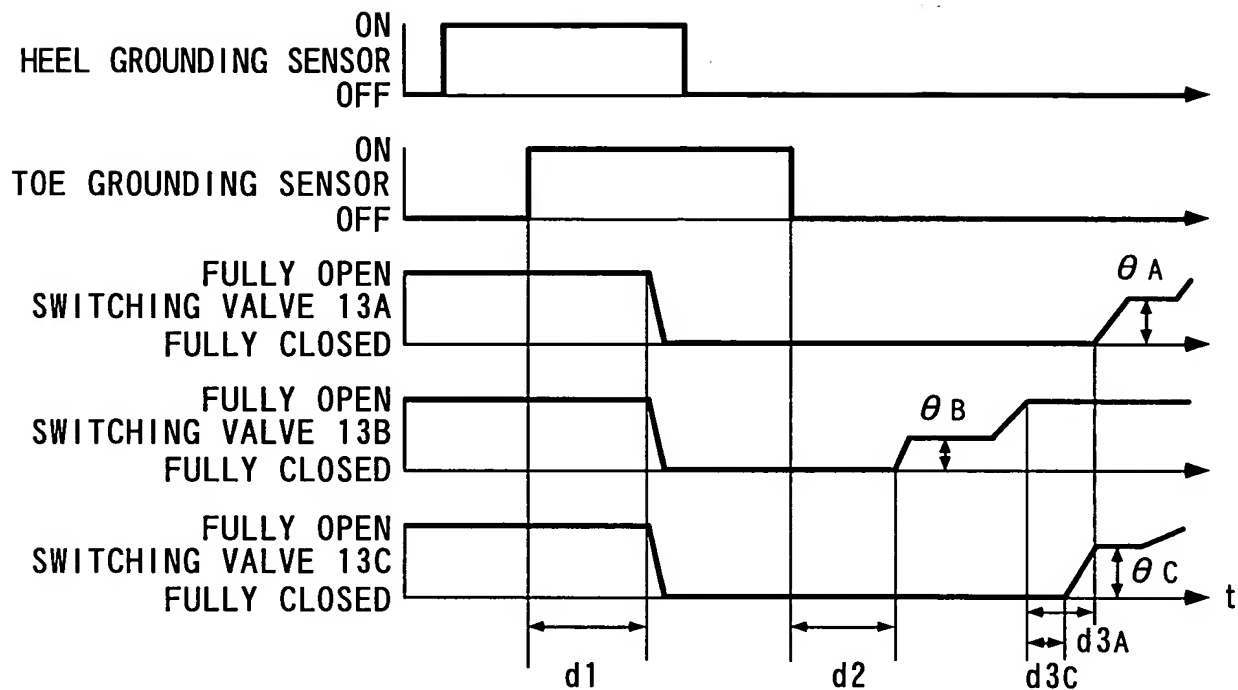
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F I G. 7

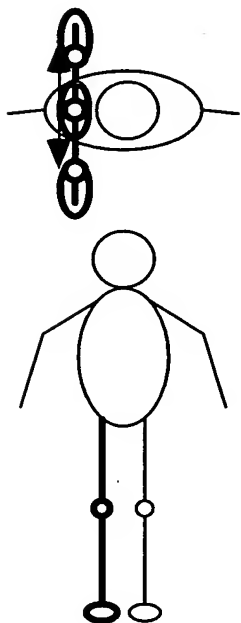
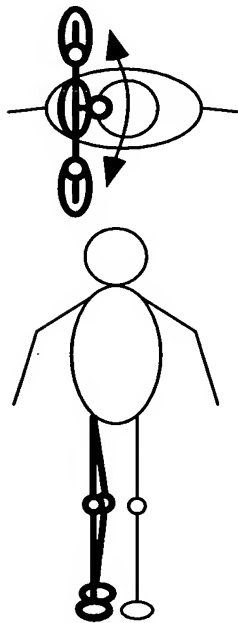
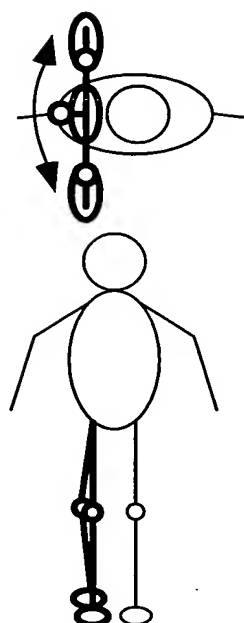


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F I G. 8



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FIG. 9 A  
NORMAL LEGFIG. 9 B  
KNOCK-KNEE LEGFIG. 9 C  
BOWLEG



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FIG. 10A

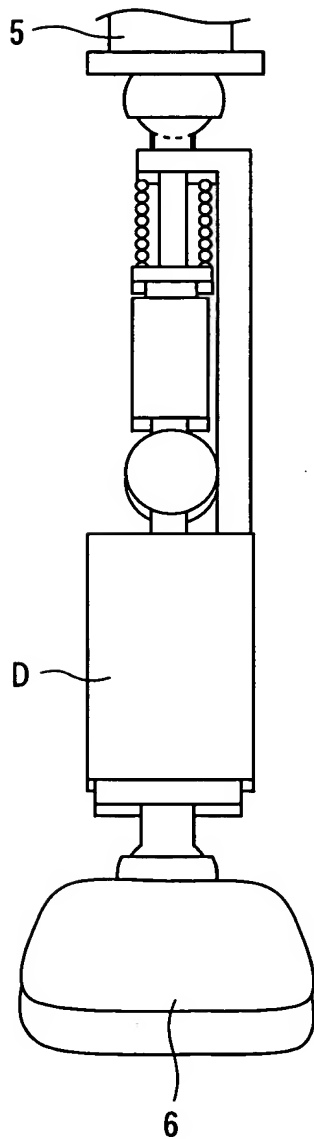


FIG. 10B

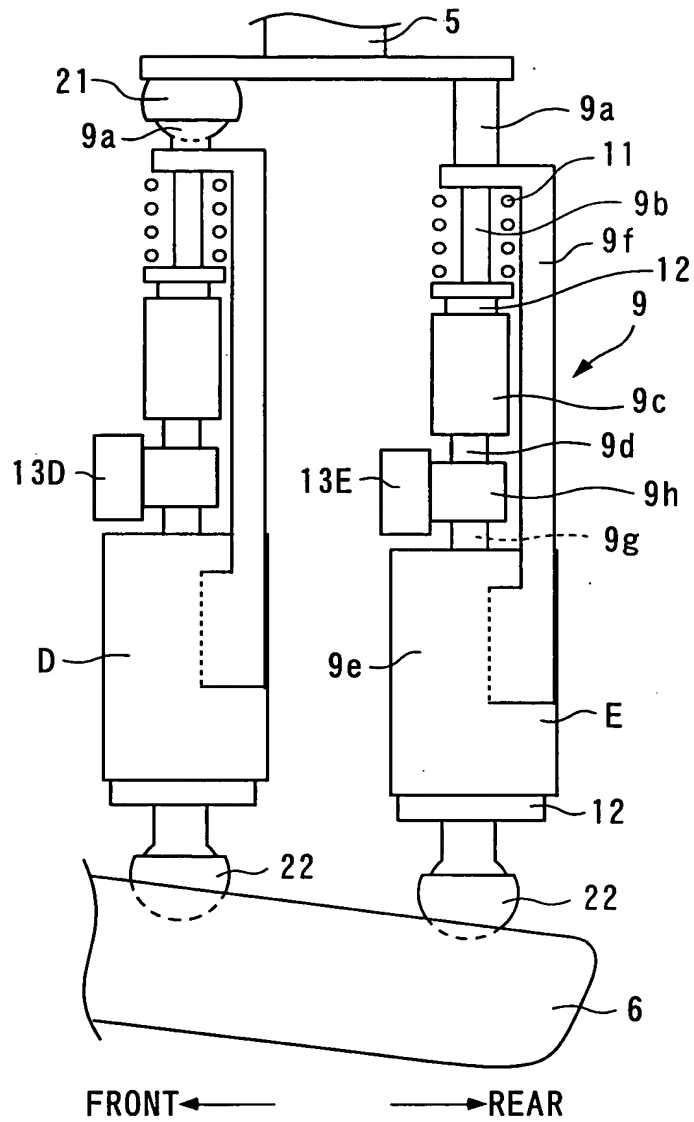


FIG. 11 A

AT NORMAL TIME

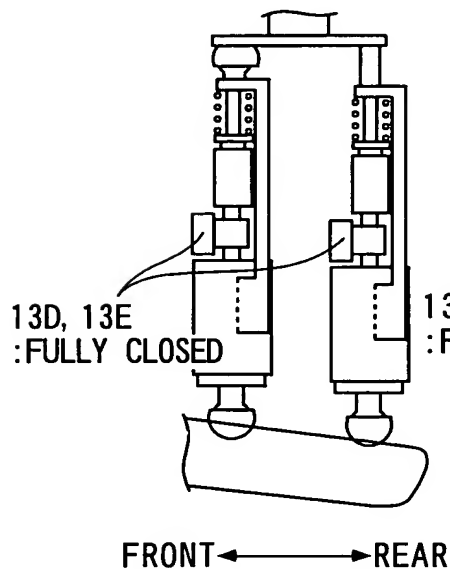


FIG. 11 B

DURING WEIGHT APPLICATION

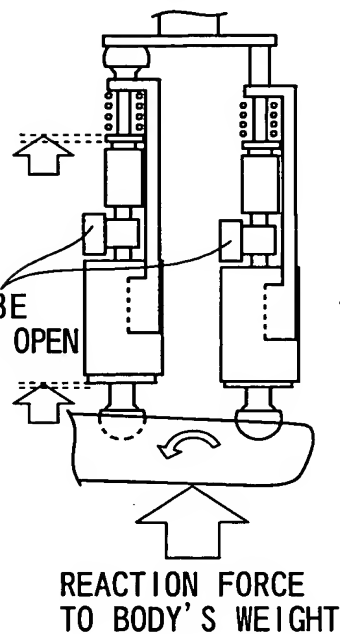


FIG. 11 C

DURING PRESSURE MAINTAINING TIME

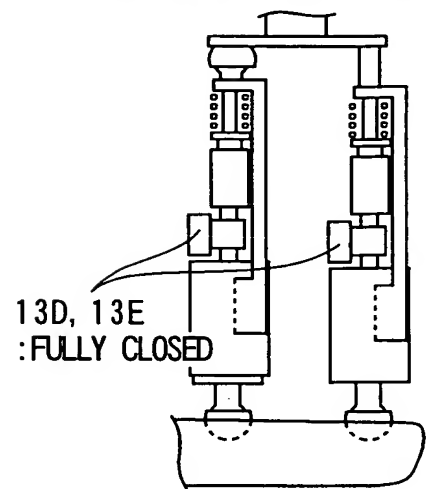


FIG. 11 D

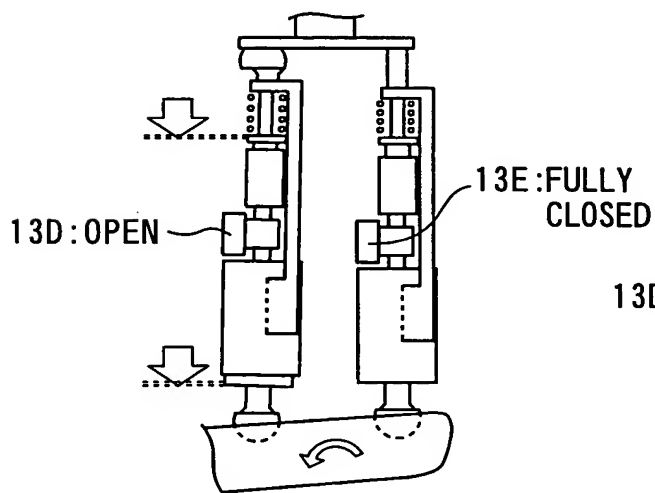
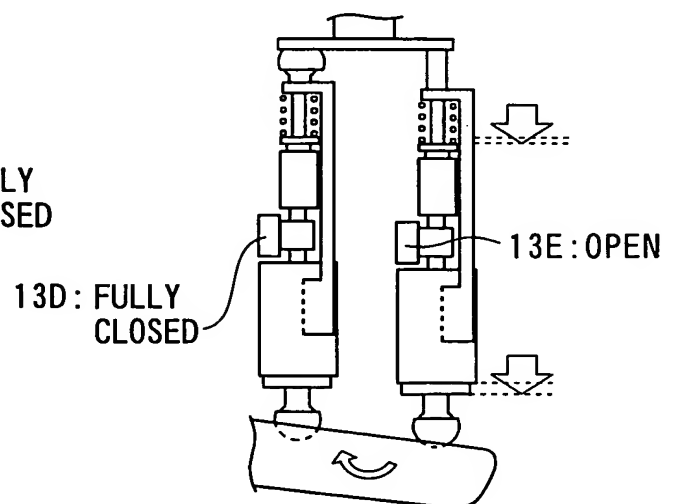
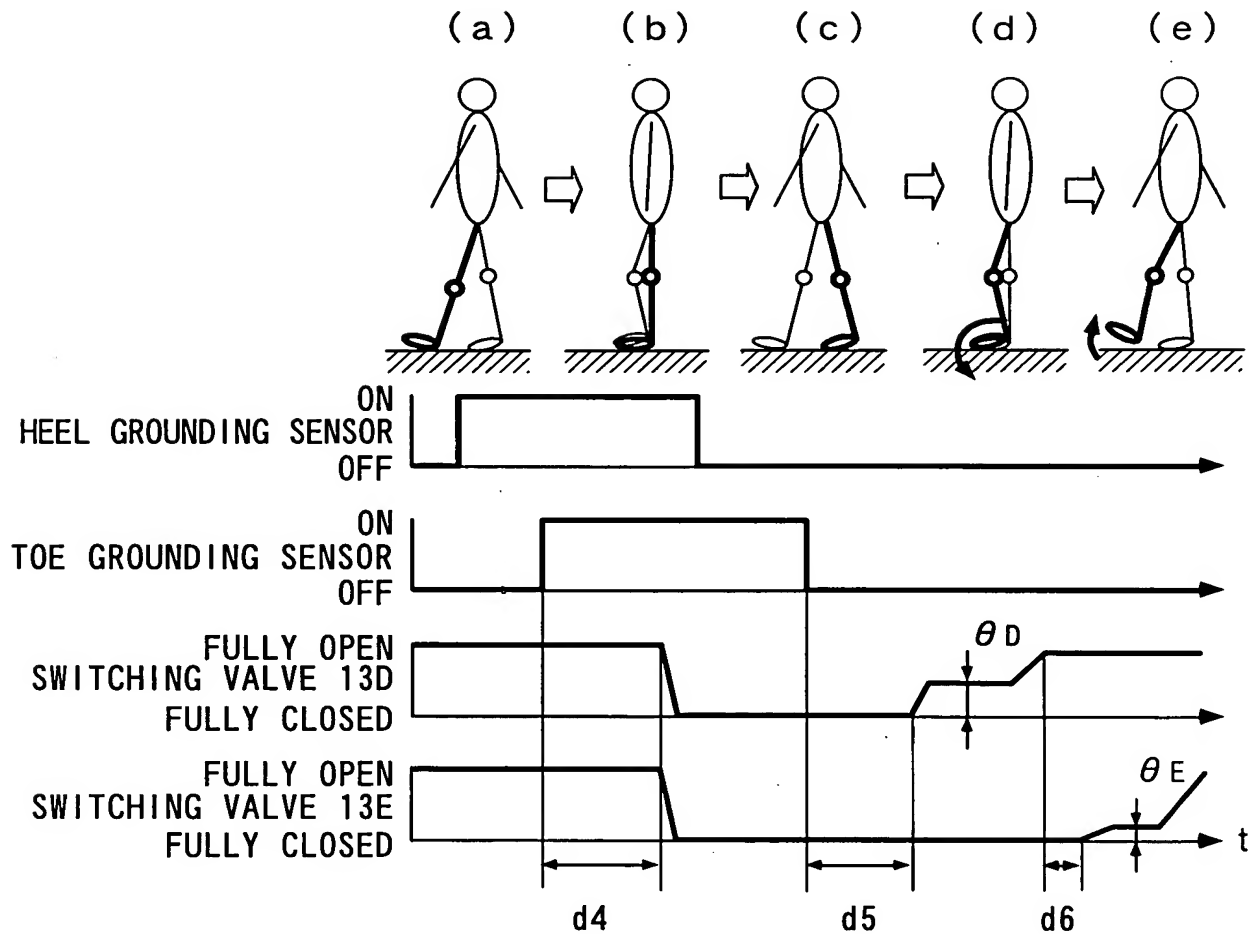
DURING DOWNWARD ROTATION  
OF FOOT MEMBER  
(KICKING MOTION)

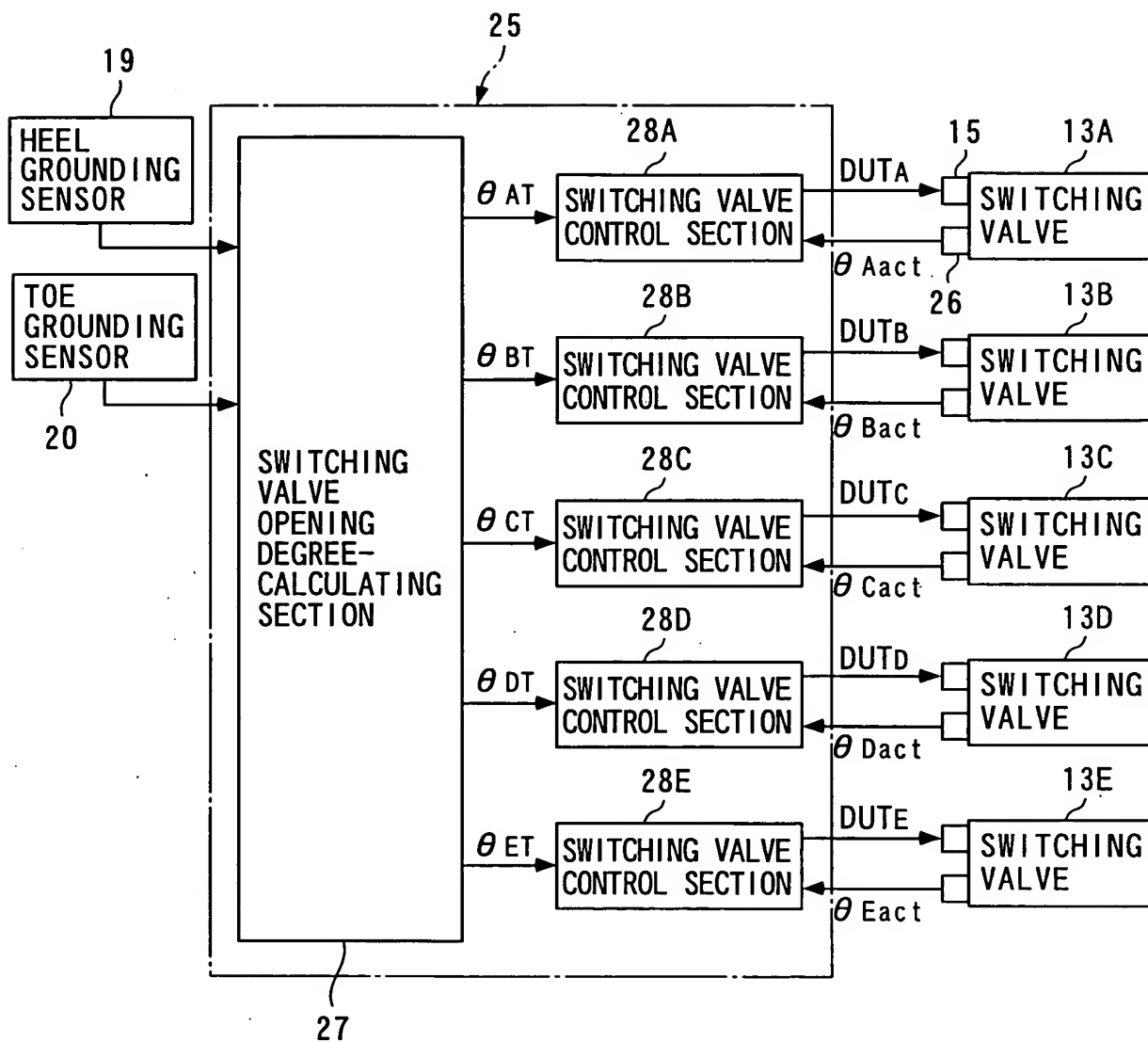
FIG. 11 E

DURING UPWARD ROTATION  
OF FOOT MEMBER  
(TOE-UP MOTION)

F I G. 1 2



F I G. 1 3



F I G. 1 4

RESPONSE-SPECIFYING CONTROL ALGORITHM

$$\begin{aligned} DUT(k) = & -Krch \sigma(k) - Kadp \sum_{i=0}^k \sigma(i) \\ & - Keq \theta_{act}(k) - Keqr \theta T(k) \end{aligned} \quad (3-1)$$

$$\sigma(k) = e(k) - Se(k-1) \quad (3-2)$$

$$e(k) = \theta_{act}(k) - \theta T(k) \quad (3-3)$$

F I G. 1 5

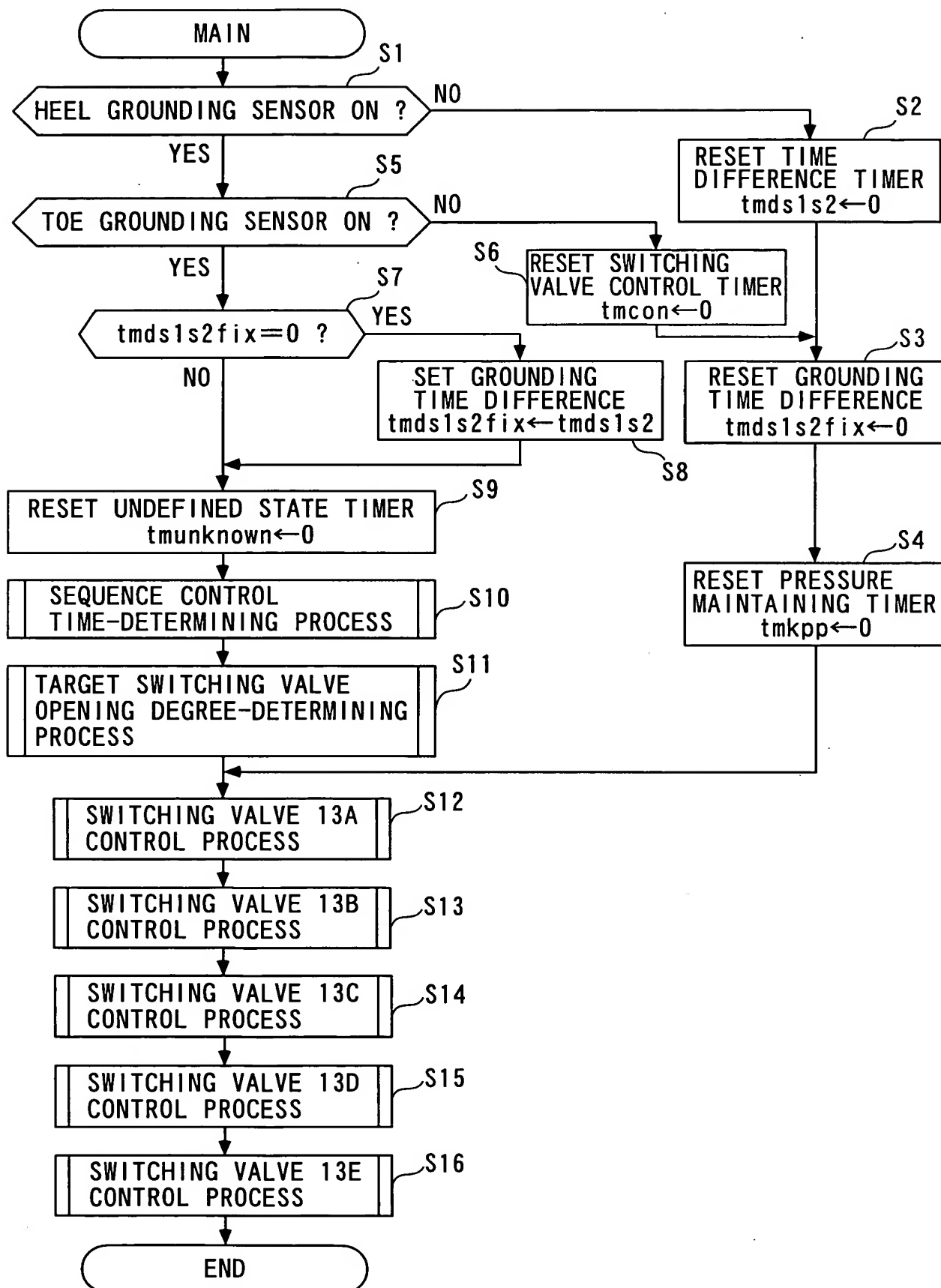
2 DEGREE-OF-FREEDOM CONTROL ALGORITHM

$$\begin{aligned} DUT(k) = & -Kp \theta_{act}(k) + Kpr \theta T(k) \\ & - Kd \dot{\theta}_{act} + Kdr \dot{\theta} T(k) \\ & - Ki \sum_{i=0}^k e(i) \end{aligned} \quad (3-4)$$

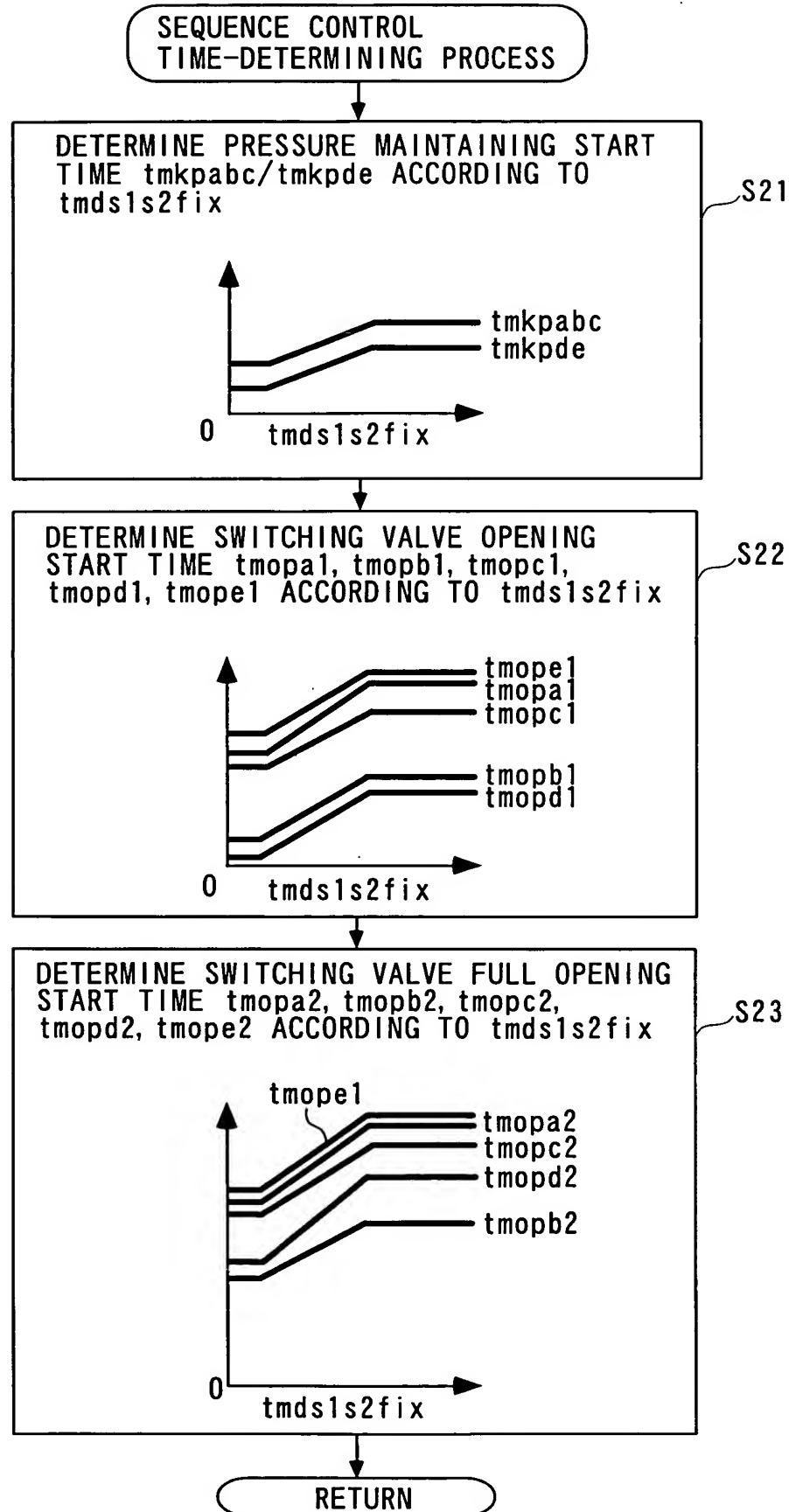
$$e(k) = \theta_{act}(k) - \theta T(k)$$

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FIG. 16



F I G. 1 7



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F I G. 1 8

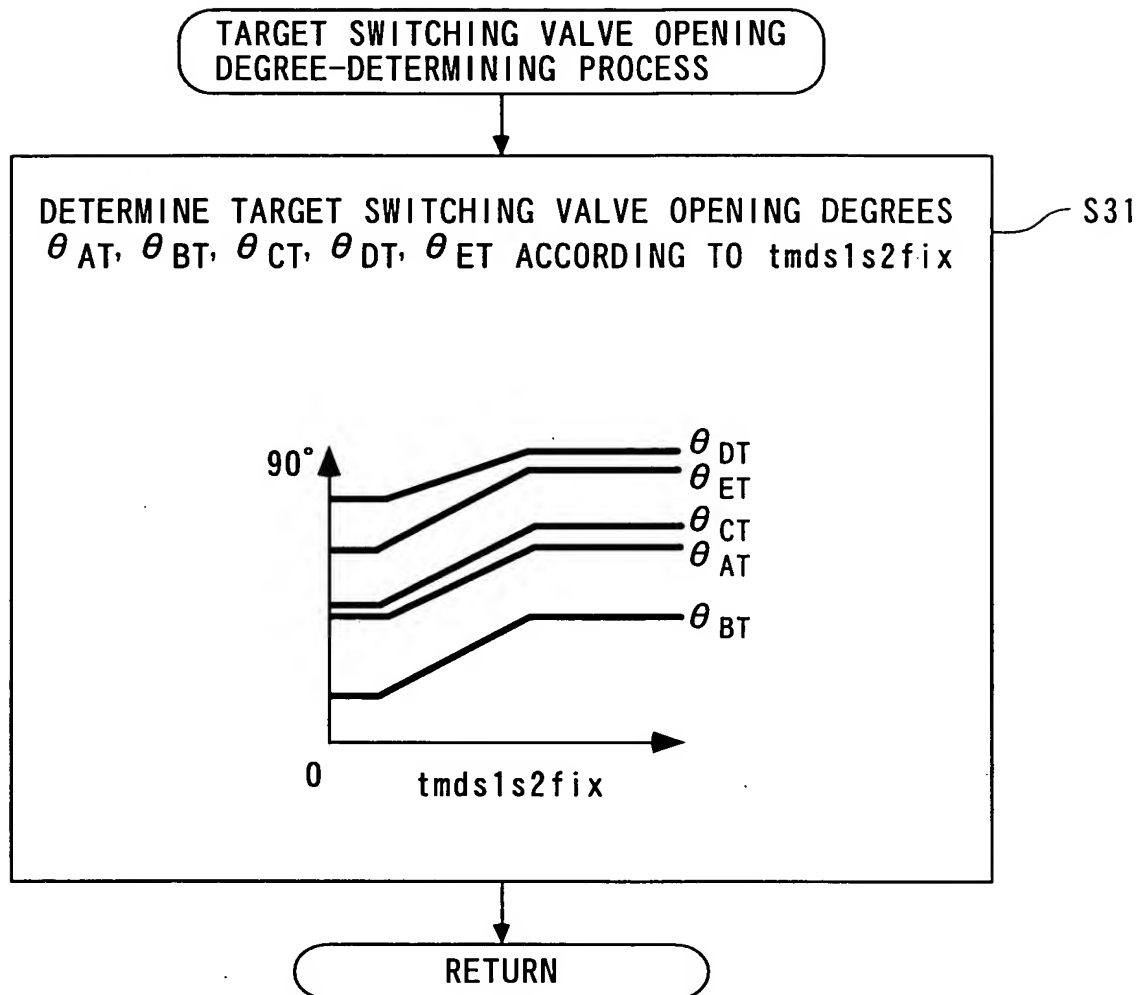




FIG. 19

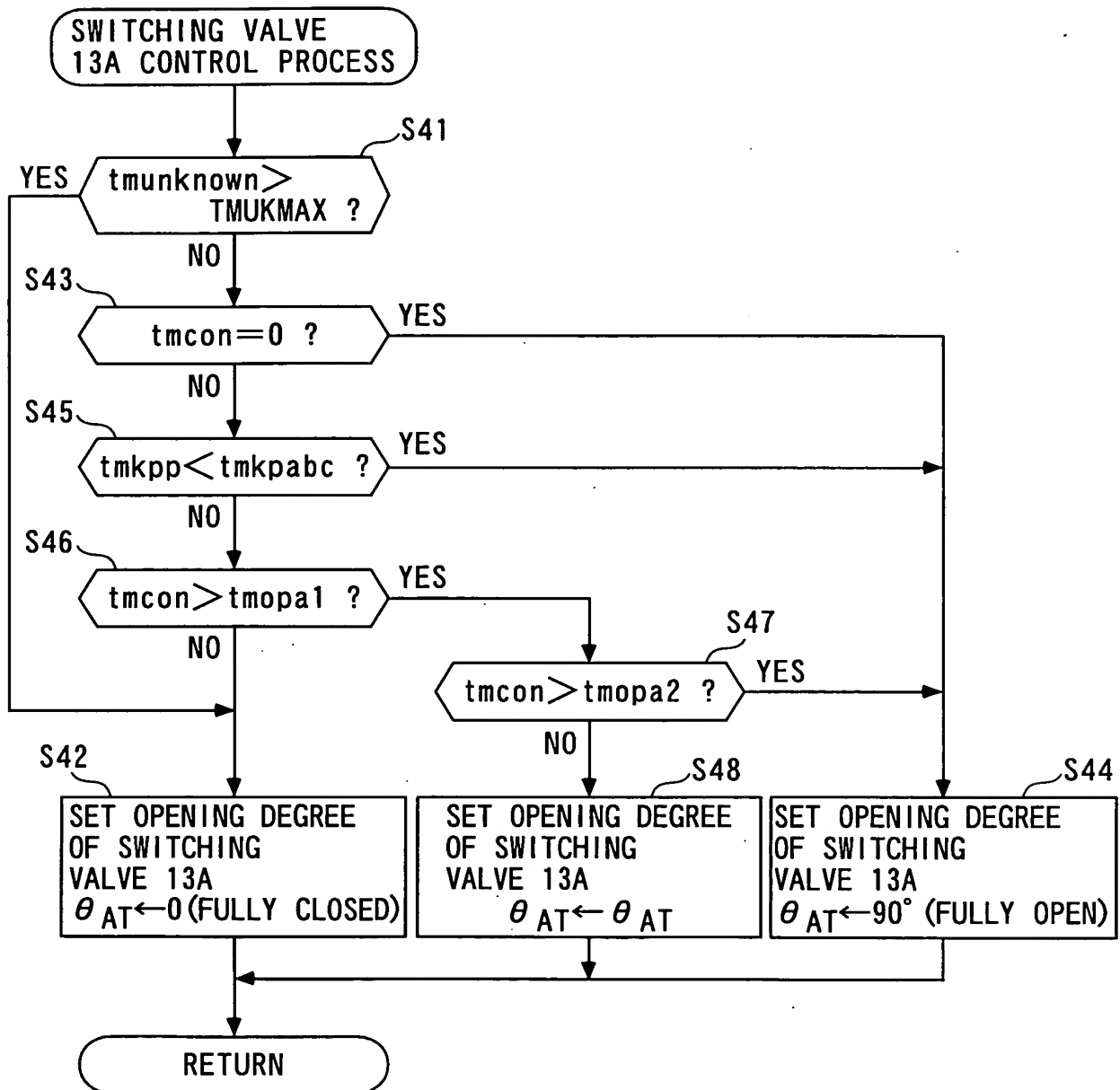
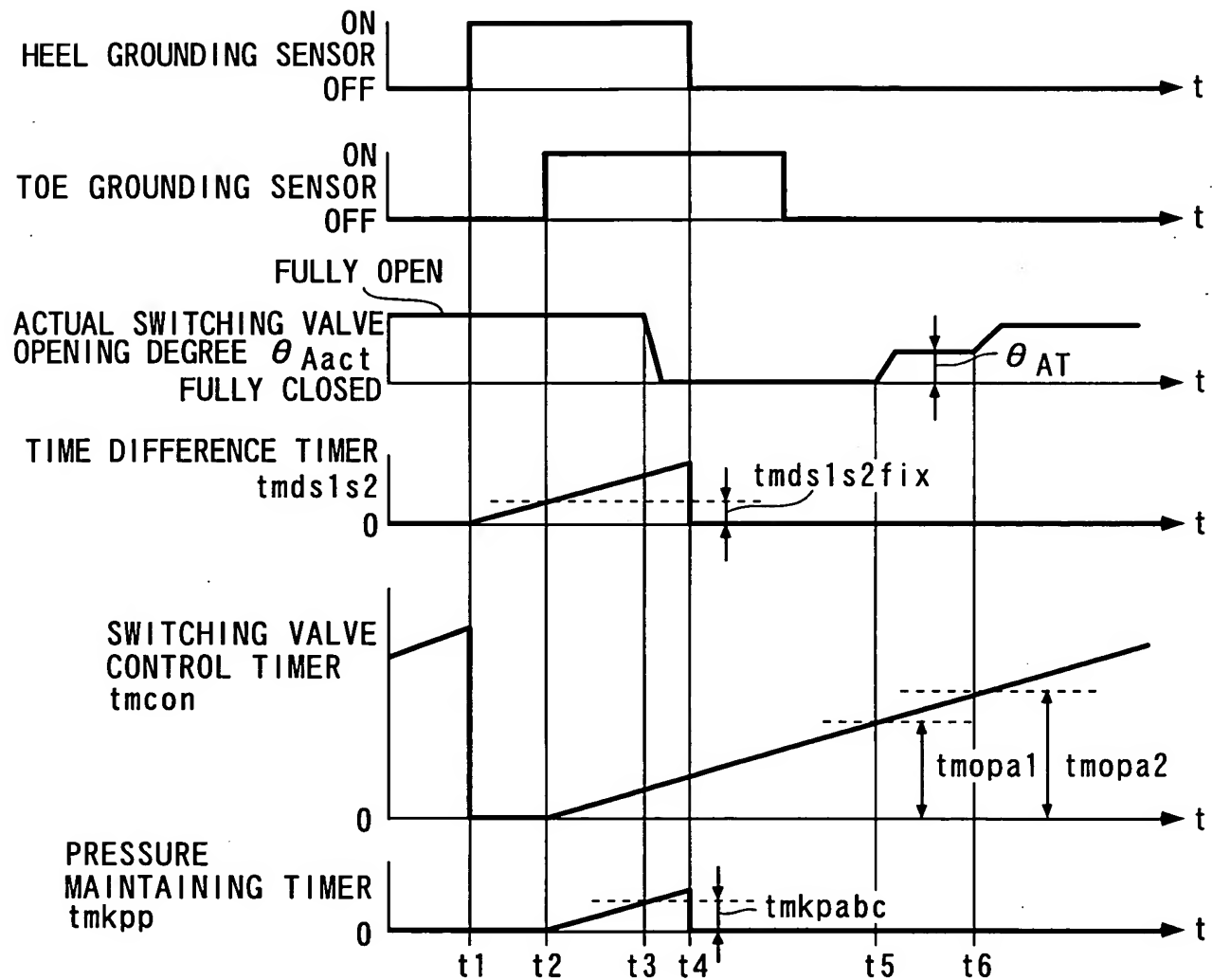
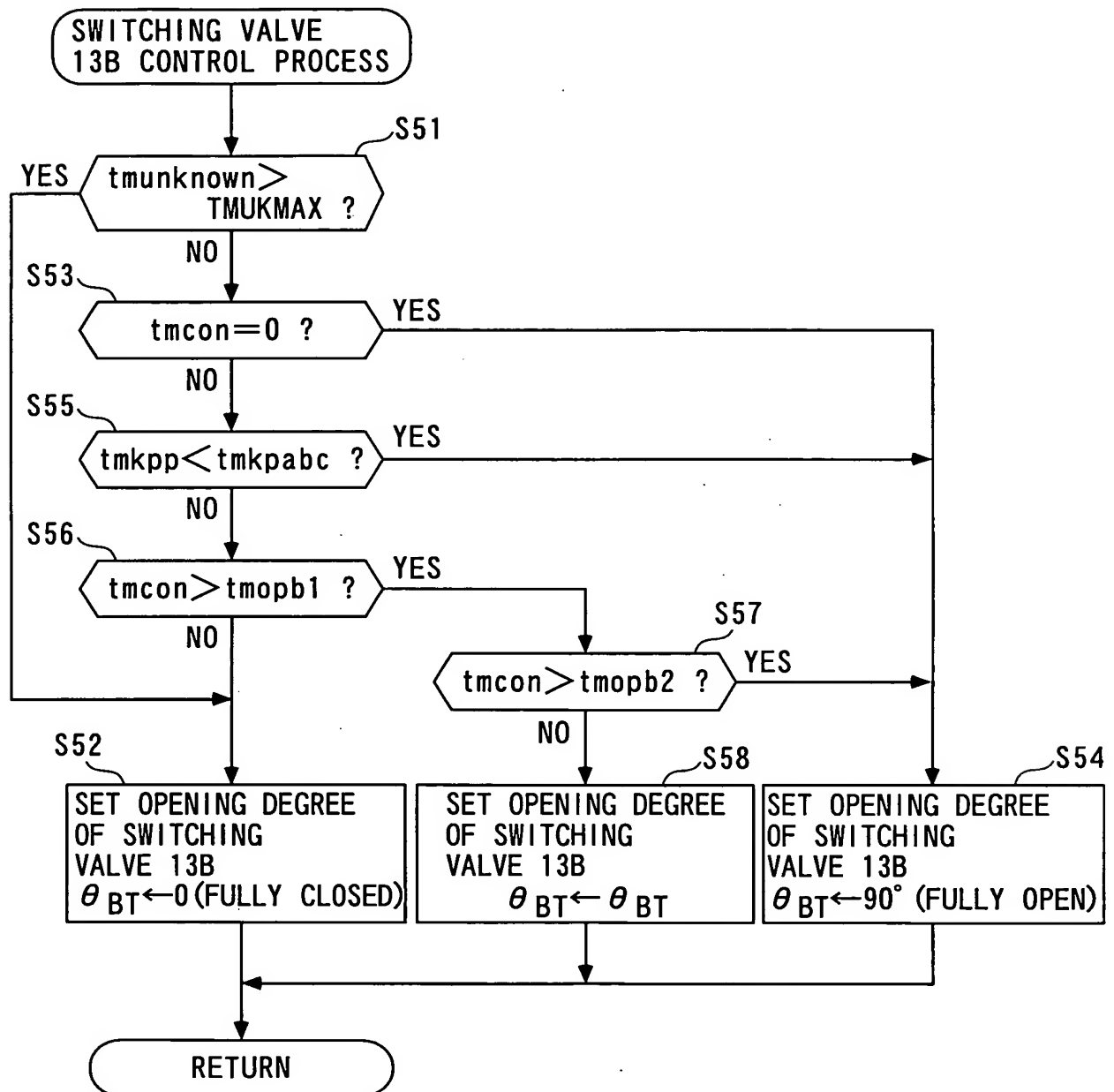


FIG. 20



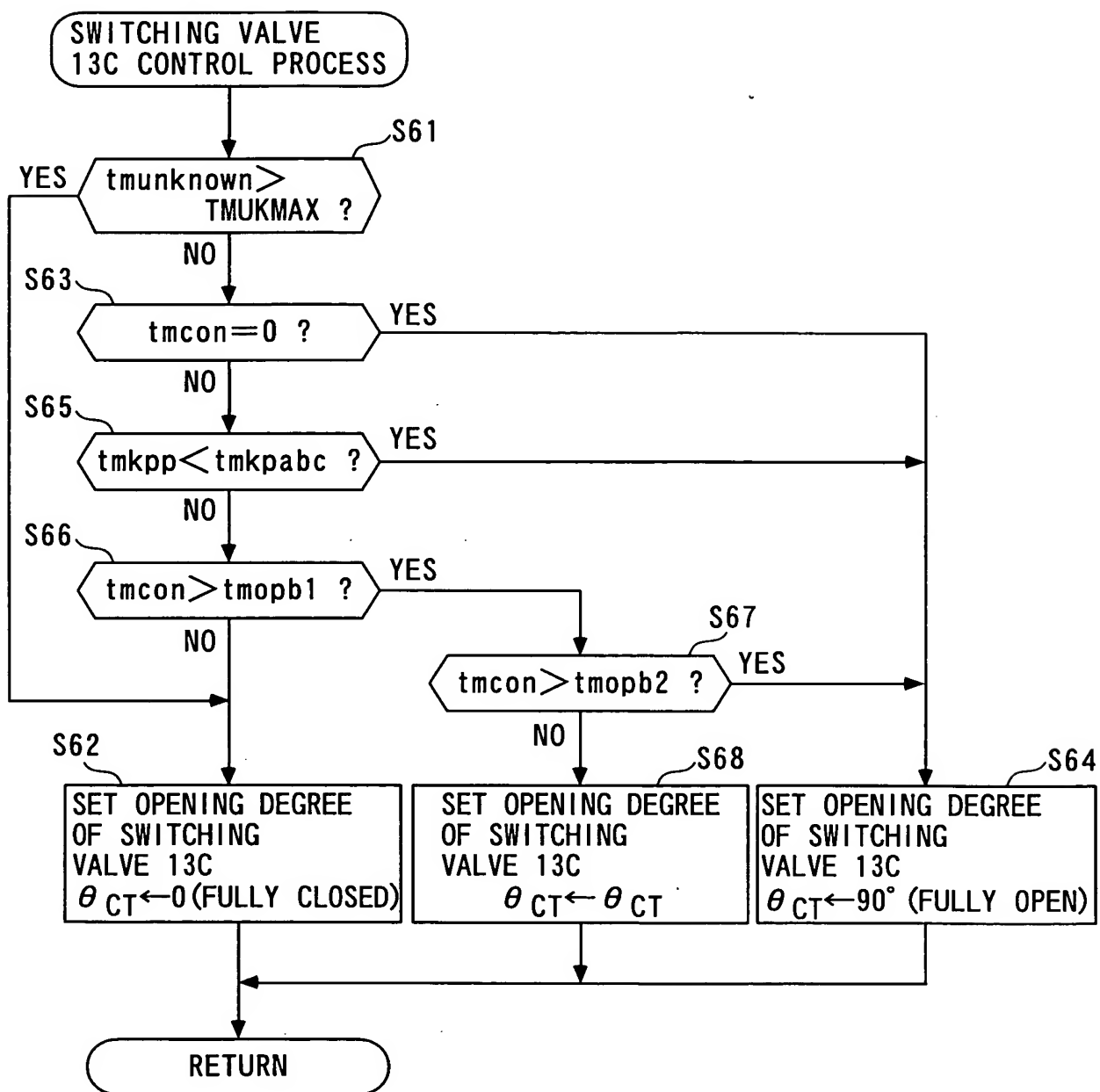
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F I G. 2 1



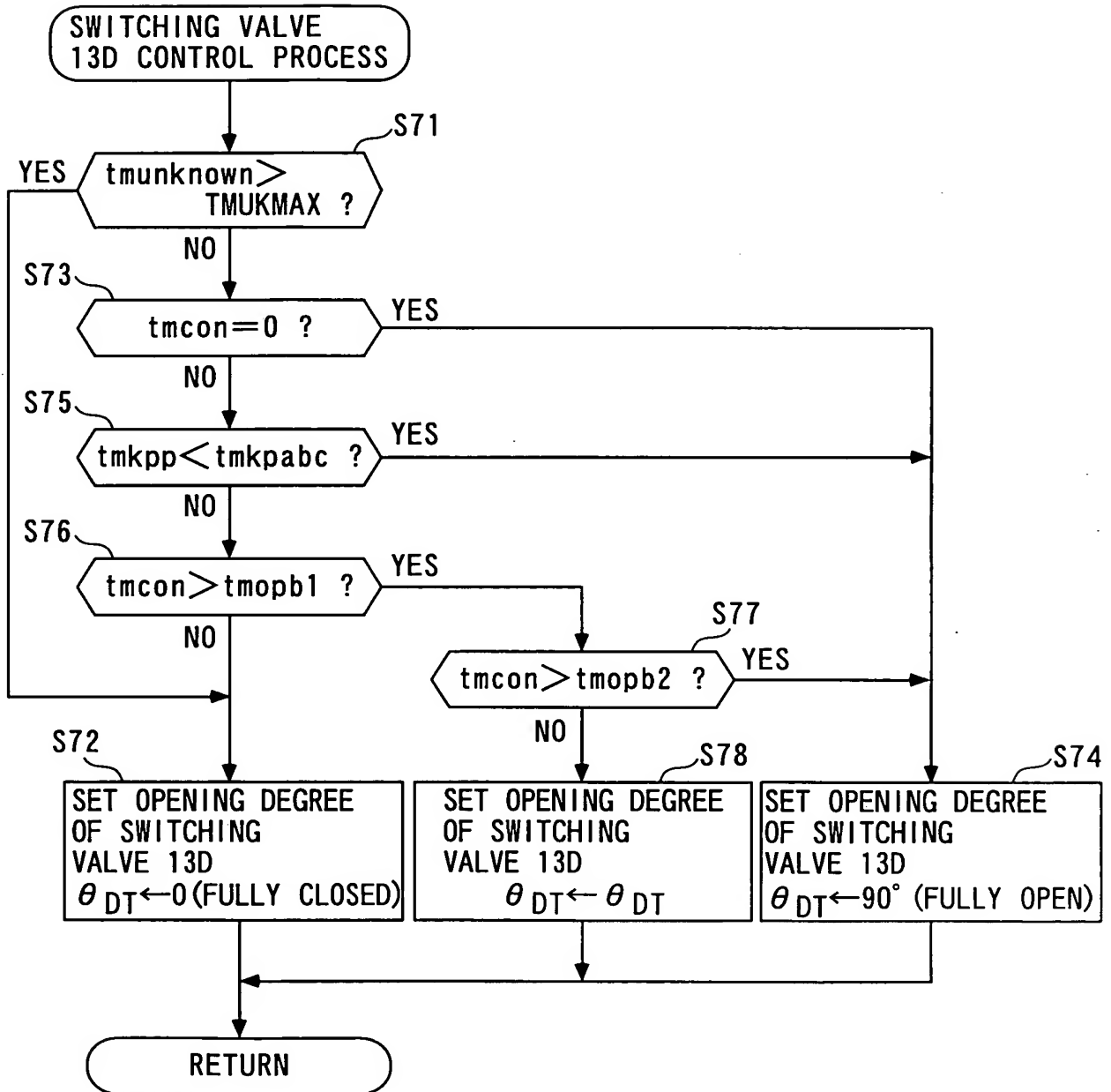
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FIG. 22



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F I G. 2 3



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F I G . 2 4

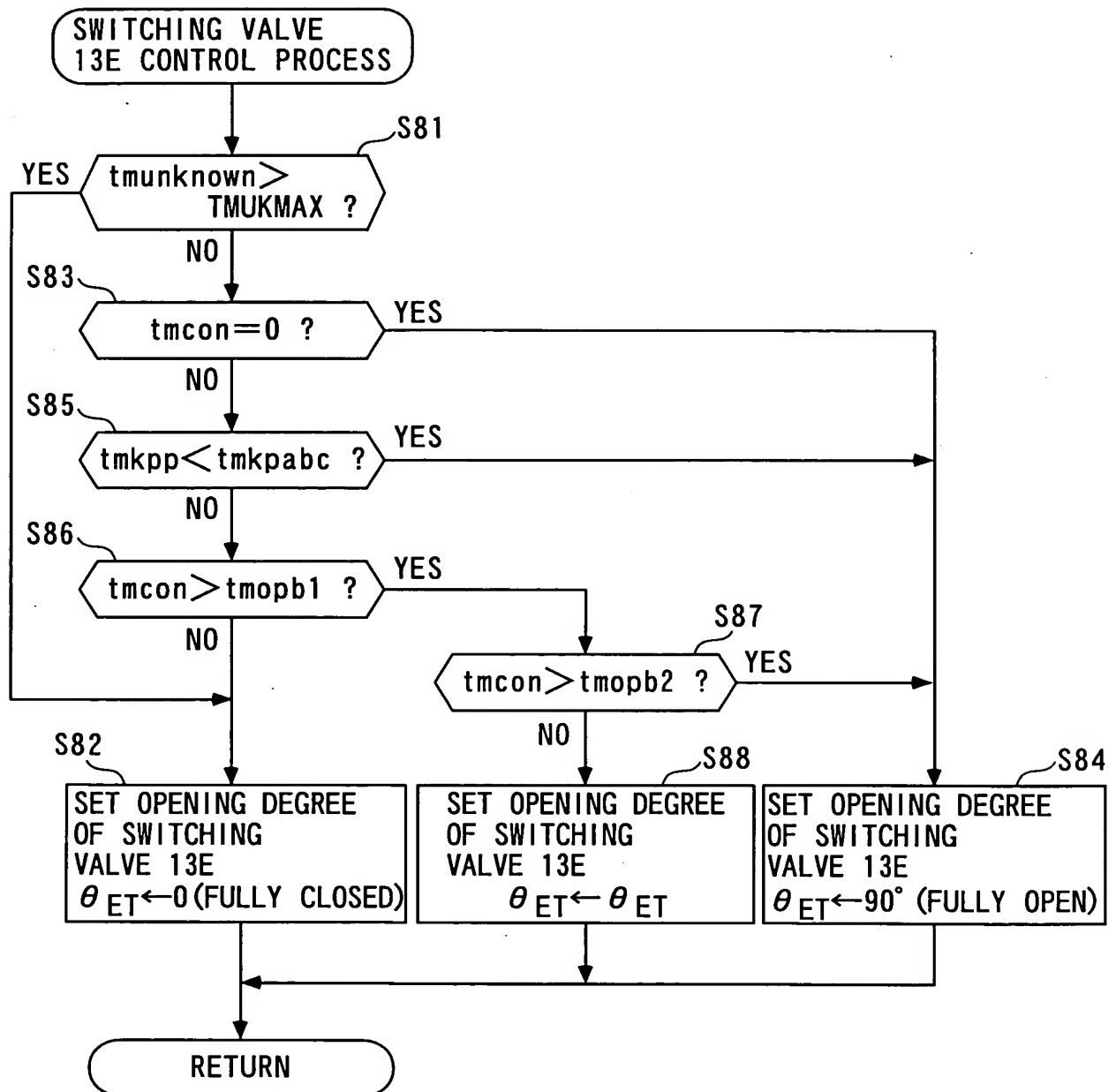


FIG. 25A

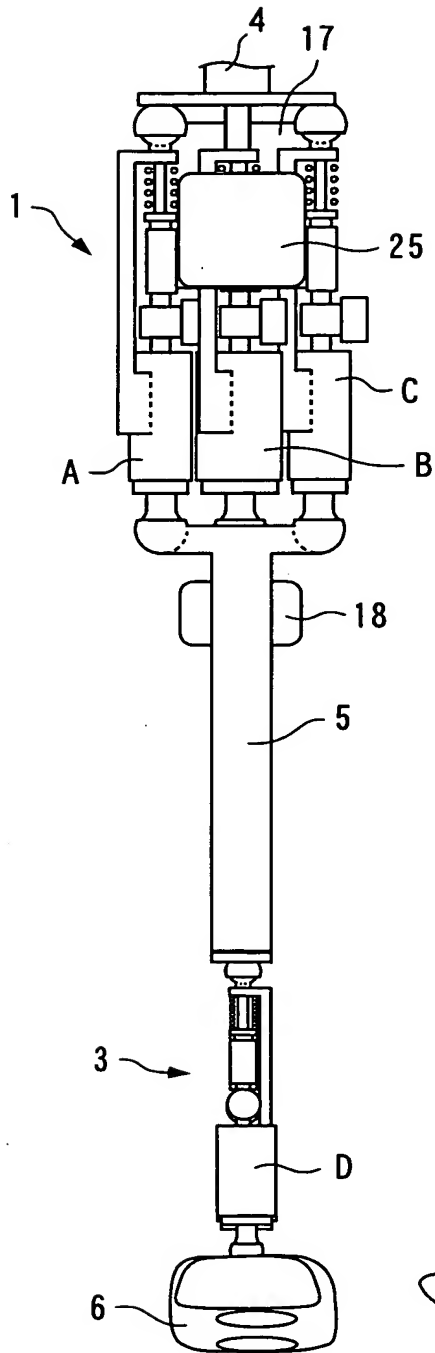
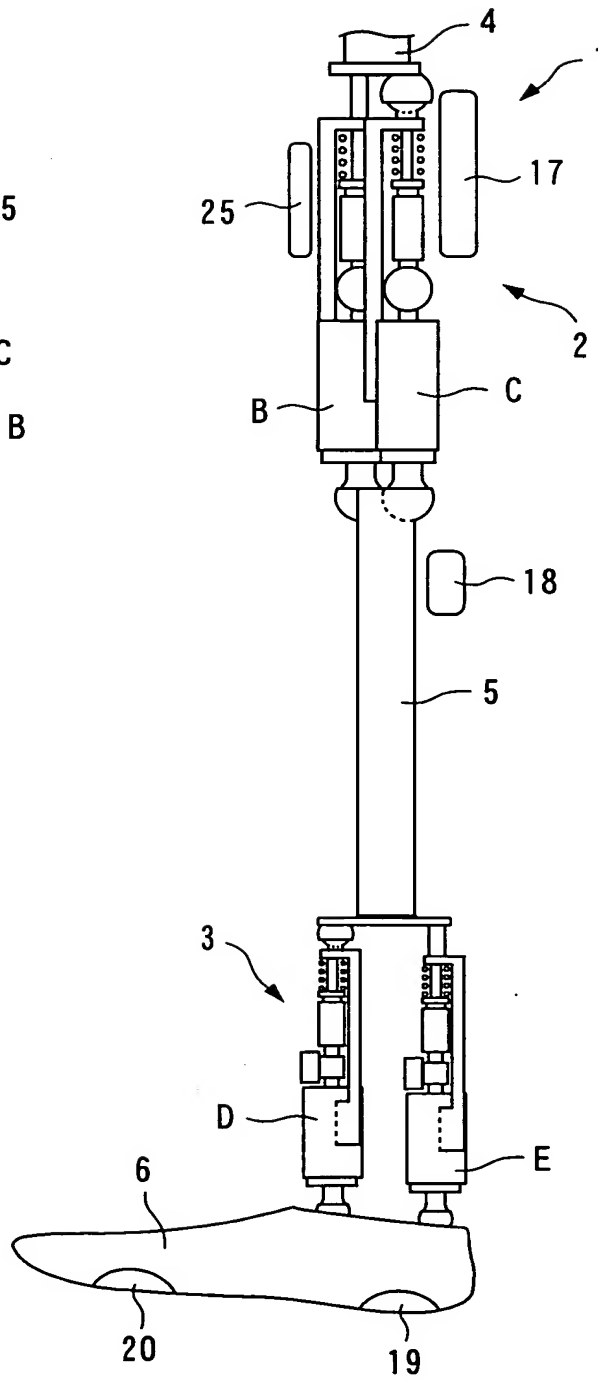
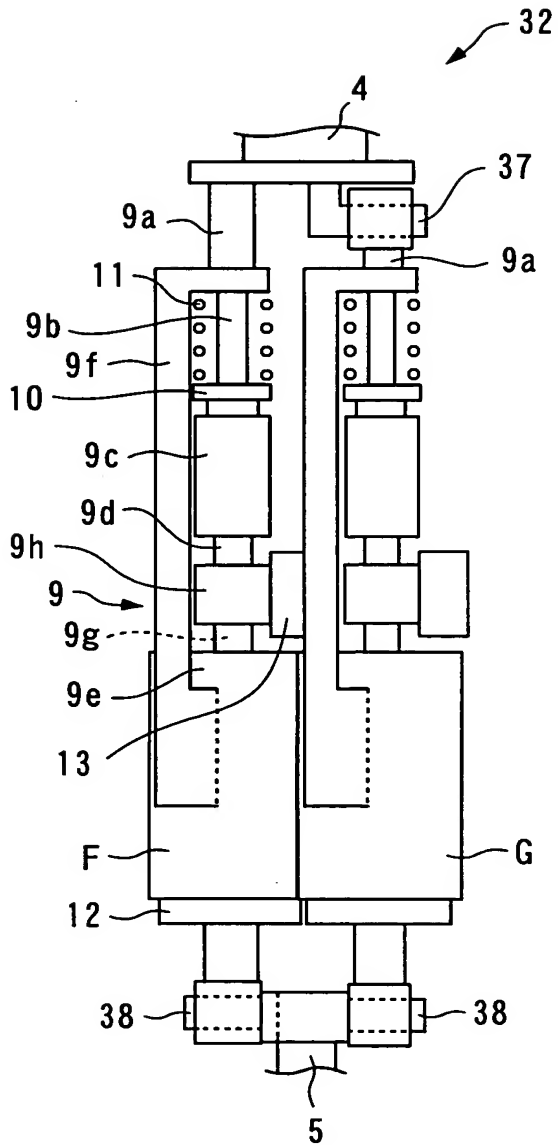


FIG. 25B

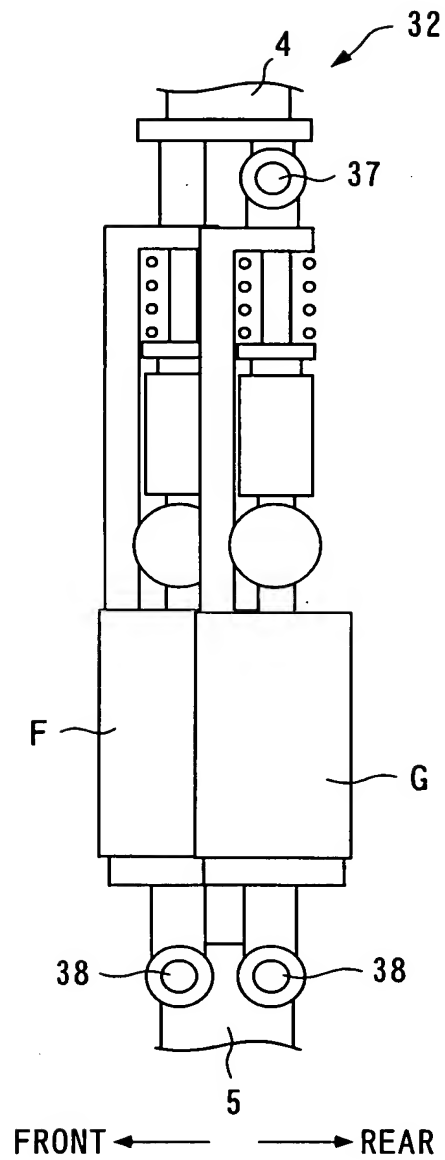


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F I G . 2 6 A



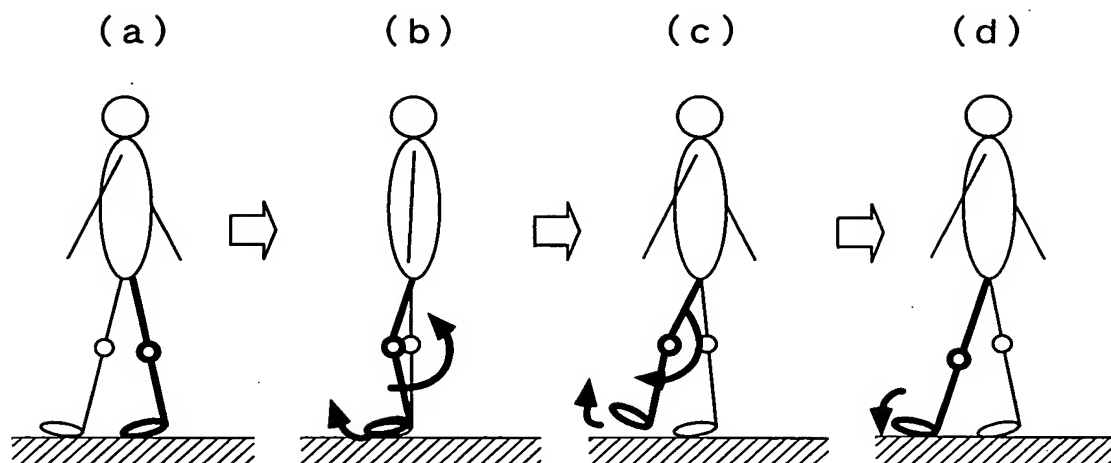
F I G . 2 6 B





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F I G. 2 7



F I G. 2 8

